

First Named Inventor: Victor B. Sapozhnikov

Application No.: 09/619,738

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REMARKS

This is in response to the Office Action mailed on October 28, 2002 and the Communication mailed on April 2, 2003. The present Communication asserts that Applicant's reply to the previous Office Action is not fully responsive. Specifically, the present Communication asserts that Applicant failed to address the 35 U.S.C. § 112, first paragraph rejection of the claims – namely that "Applicant has not addressed 'how the disclosed methodology is applicable to any substrate or depositing material as presently claimed.'" Applicant responded to the October 28, 2002 Office Action by canceling claims 1-20 and submitting new claims 21-40, believing that the claims were enabled by the specification.

With this Amendment, Applicant amends claim 26 to correct a typographical error and amends independent claims 21, 27, and 35 to specifically call out the existence of a substrate and to definitively claim several elements previously recited in the preamble. Applicant also more fully responds to the enablement rejection. Finally, a portion of the Specification is amended to ensure that the computer simulation discussed at page 4, line 15 through page 6, line 15 is not described in the past tense.

Claims 21-40 are each directed toward a thin film structure having lateral composition modulations. The thin film structures of claims 21-40 are each formed of at least two components, each of which was simultaneously deposited from a different direction at a different deposition angle, wherein each deposition angle is measured with respect to a vertical line substantially normal to a plane of the thin film structure. The thin film structures of claims 21-40 each require an uneven growing film topography and a plurality of layers deposited thereon. The growing film topography has at least two surfaces, each of which is oriented to collect more of one of the at least two components than the remaining components during simultaneous deposition of the at least two components. The resulting plurality of layers has a ballistic separation of the at least two components.

The present Specification teaches that a thin film structure having lateral composition modulations can be built by depositing at least two separate components at differing deposition

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angles, deposition directions, and/or deposition rates. (Page 3, lines 21-24). The application further teaches that these composition variations, or modulations, result from a natural roughness of the growing film surface. (Page 3, lines 25-26). Thus, regardless of the specific substrate used, or the specific depositing materials, the growing film topography necessarily will have an uneven surface which will result in the ballistic separation of the at least two components. In other words, the Specification teaches that the operation of the invention is not dependent upon the selection of a specific substrate or upon the selection of specific depositing materials. Any combination of substrate and depositing materials will result in an uneven film topography onto which the depositing materials (if deposited at differing deposition angles, deposition directions, and/or deposition rates) will naturally separate – resulting in the claimed lateral modulation in composition. Thus, Applicant believes that claims 21-40 are fully enabled by the Specification.

The Office Action of October 28, 2002, at paragraph 9, states that "the Specification appears to be directed to prophetic examples as determined from computer simulations." Applicant respectfully disagrees. The specification is directed toward disclosure of the above-described invention, and simply makes use of two computer simulations to illustrate the invention. No requirement exists that Applicant describe actual embodiments or examples. *Lawson v. Bruce*, 105 U.S.P.Q. 440 (CCPA 1955). Nor is Applicant required to have actually reduced to practice any examples that are provided in the specification before the filing of the application; it is only required that the specification contain a disclosure which enables those skilled in the art to practice the invention. *Corning Glass Works v. Sumitomo Electric USA Inc.*, 5 USPQ2d 1545, 1562 (S.D. N.Y. 1987), *aff'd*, 9 USPQ2d 1962 (Fed. Cir. 1989). Applicant respectfully submits that the disclosure is sufficient to enable one of skill in the art.

In the enablement rejection of the pending claims, the Office Action cites to the background section of Robbie et al., U.S. Patent No. 6,248,422 as discussing the general problem of prophetic examples in the field of growing thin films and the difficulty of generically applying such theoretical teachings to actual chemical systems. Robbie et al., however, makes no such sweeping statement. In the background section, Robbie et al. discuss two specific prior art

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references – the Hamaguchi patent and the Azzam paper. Robbie et al. point out that the Hamaguchi patent discloses only one particular structure, with limited variation of the columnar growth. And, regarding the Azzam paper, Robbie et al. allege that its prophetic example fails to provide sufficient fabrication details. Specifically, Robbie et al. assert that the Azzam paper fails specify a particular polar angle of the incident vapor flux, although Robbie et al. admit that the Azzam paper shows use of an angle of less than 60° in a figure. Robbie et al. further assert that when they attempted to grow the Azzam structure using an angle greater than 60°, they did not obtain a well-defined structure. (Col. 1, line 30 - col. 2, line 11). Robbie et al. do not specify whether the use of an angle less than 60° as taught by the Azzam paper would yield a well-defined structure. Thus, Robbie et al. provides only a general critique of two prior art references. Nowhere does Robbie et al. allege difficulty in generally applying prophetic examples to actual examples. Thus, the background section of Robbie et al. relied upon in the Office Action does not establish that claims 21-40 of this application – which are not directed to the subject matter of Robbie et al., Hamaguchi, or Azzam – are not enabled.

Applicant believes the foregoing remarks fully address the 35 U.S.C. § 112, first paragraph rejection, and that this rejection should be withdrawn. Reconsideration and notice to that effect is respectfully requested. The Examiner is invited to contact the undersigned at the telephone number listed below if such a call would in any way facilitate allowance of the application.

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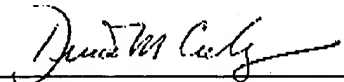
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The Commissioner is authorized to charge any additional fees associated with this paper or credit any overpayment to Deposit Account No. 11-0982. A duplicate copy of this communication is enclosed.

Respectfully submitted,

KINNEY &amp; LANGE, P.A.

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